Telecommunications and Information Technology Planning

The telecommunications and information technology planning function represents the highest-level system or network perspective of the Institute. This work can be characterized generally as planning and analyzing existing, new, and proposed telecommunications and information technology systems, especially networks, for the purpose of improving efficiency and enhancing the technical performance and reliability of those systems. In many cases, ITS performs this work for both wireline and wireless applications. This portion of the ITS technical program encompasses work that is frequently referred to in industry as “systems engineering.”

All phases of strategic and tactical planning are conducted under this work area; problem solving and actual implementation engineering also are done. ITS engineers identify or derive users' functional requirements and translate them into technical specifications. Telecommunication system designs, network services, and access technologies are analyzed, as well as information technologies (including Internet and Internet-related schemes). Associated issues, such as network management and control and network protection and privacy, also are addressed. Integration of individual services and technologies is a common task in many projects, along with the application of new and emerging technologies to existing applications.

Areas of Emphasis

Broadband Wireless Standards The Institute develops new radio propagation algorithms and methods that improve spectrum usage of wireless systems. Technical standards are prepared that support U.S. interests in third generation (3G) broadband wireless systems. The project is funded by NTIA.

Emergency Telecommunications Service (ETS) A two-prong approach addresses ETS. The Institute develops and verifies ETS Recommendations for ITU-T Study Group 9. Computer simulation, laboratory studies, security analyses, and traffic engineering are used to support Critical Infrastructure Protection initiatives related to broadband cable television networks. A second project provides ETS expertise relating to Network Survivability for Technical Subcommittee T1A1. These two projects are funded by the National Communications System (NCS).

Networking Technology The Institute characterizes and analyzes the fundamental aspects of networks, and network interoperability, “from the bottom, up.” Networking technology methodologies and tools are developed to address discovery, monitoring/measurement, simulation, management, and security/protection issues. This project is funded by NTIA.

Justice/Public Safety/Homeland Security Telecommunications Interoperability Standards The Institute conducts a technical program aimed at facilitating effective telecommunications interoperability and information-sharing among dissimilar wireless and information technology systems of local, state, and Federal government agencies. The main thrust is the development of interoperability standards. The NCS, Public Safety Wireless Network (PSWN), and NIST’s Office of Law Enforcement Standards (a Technology Center of the National Institute of Justice) fund the program.

Railroad Telecommunication Planning The Institute performs radio infrastructure system planning in support of a high-speed rail pilot program, and demonstrates newly designed digital land mobile radio technology and infrastructure, compliant with TIA-102 standards, along the Pacific Northwest rail corridor. The Federal Railroad Administration funds this project.

Voice Over Packet The Institute develops technical contributions related to Internet Protocol (IP) telephony gateways and their supporting infrastructure for the TIA TR41 Standards Formulating Group. Work is conducted to ensure that user interfaces being developed for IP telephony satisfy national security and emergency preparedness communications requirements. This project is funded by NCS.